

Application Serial No.: 10/799,504
Attorney Docket No.: 0160116

List of Claims:

Claim 1 (Previously Presented): A method for recovering a speech frame, the method comprising:

obtaining a first current input speech frame;

reconstructing said first current input speech frame from a previous input speech frame to generate a reconstructed first current input speech frame in response to an indication that said first current input speech frame has not been properly received;

obtaining a second current input speech frame immediately following said first current input speech frame;

time warping said second current input speech frame and said reconstructed first current input speech frame to coincide a peak of said second current input speech frame with a peak of said reconstructed first current input speech frame while maintaining an intersection point of said second current input speech frame with a third current input speech frame immediately following said second current input speech frame, wherein said time warping generates a time-warped second current input speech frame and a time-warped reconstructed first current input speech frame; and

creating a new second current input speech frame by overlapping-and-adding said time-warped second current input speech frame and said time-warped reconstructed first current input speech frame.

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Claim 2 (Previously Presented): The method of claim 1, wherein each of said speech frame represents a speech signal having zero or more pitch cycles.

Claim 3 (Previously Presented): The method of claim 2, wherein said time warping comprises shifting one or more peaks of said pitch cycles of said second current input speech frame and one or more peaks of said pitch cycles of said reconstructed first current input speech frame to coincide at least one of said one or more peaks.

Claim 4 (Previously Presented): The method of claim 1, wherein said overlapping-and-adding fades-in said second current input speech frame and fades-out said reconstructed first current input speech frame.

Claim 5 (Previously Presented): The method of claim 1, wherein said reconstructing said first current input speech frame from a previous input speech frame comprises copying said previous input speech frame as said reconstructed first current input speech frame.

Claim 6 (Previously Presented): The method of claim 1, wherein said previous input speech frame immediately precedes said first current input speech frame.

Claim 7 (Previously Presented): The method of claim 1, wherein said overlapping-and-adding is a linear fade operation.

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Claim 8 (Previously Presented): An apparatus for recovering a speech frame, the apparatus comprising:

a receiver for obtaining a first current input speech frame and a second current input speech frame immediately following said first current input speech frame; and

a reconstruction element for reconstructing said first current input speech frame from a previous input speech frame to generate a reconstructed first current input speech frame in response to an indication that said first current input speech frame has not been properly received;

a time warping element for time warping said second current input speech frame and said reconstructed first current input speech frame to coincide a peak of said second current input speech frame with a peak of said reconstructed first current input speech frame while maintaining an intersection point of said second current input speech frame with a third current input speech frame immediately following said second current input speech frame, wherein said time warping element generates a time-warped second current input speech frame and a time-warped reconstructed first current input speech frame; and

an overlap-and-add element for creating a new second current input speech frame by overlapping-and-adding said time-warped second current input speech frame and said time-warped reconstructed first current input speech frame.

Claim 9 (Previously Presented): The apparatus of claim 8, wherein each of said speech frame represents a speech signal having zero or more pitch cycles.

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Claim 10 (Previously Presented): The apparatus of claim 9, wherein said time warping comprises shifting one or more peaks of said pitch cycles of said second current input speech frame and one or more peaks of said pitch cycles of said reconstructed first current input speech frame to coincide at least one of said one or more peaks.

Claim 11 (Previously Presented): The apparatus of claim 8, wherein said overlapping-and-adding fades-in said second current input speech frame and fades-out said reconstructed first current input speech frame.

Claim 12 (Previously Presented): The apparatus of claim 8, wherein said reconstructing said first current input speech frame from a previous input speech frame comprises copying said previous input speech frame as said reconstructed first current input speech frame.

Claim 13 (Previously Presented): The apparatus of claim 8, wherein said previous input speech frame immediately precedes said first current input speech frame.

Claim 14 (Previously Presented): The apparatus of claim 8, wherein said overlapping-and-adding is a linear fade operation.

Claim 15 (Previously Presented): A computer program product comprising:
a computer usable medium having computer readable program code embodied therein,
said computer readable program code configured to cause a computer to recover said speech

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frame by:

obtaining a first current input speech frame;

reconstructing said first current input speech frame from a previous input speech frame to generate a reconstructed first current input speech frame in response to an indication that said first current input speech frame has not been properly received;

obtaining a second current input speech frame immediately following said first current input speech frame;

time warping said second current input speech frame and said reconstructed first current input speech frame to coincide a peak of said second current input speech frame with a peak of said reconstructed first current input speech frame while maintaining an intersection point of said second current input speech frame with a third current input speech frame immediately following said second current input speech frame, wherein said time warping generates a time-warped second current input speech frame and a time-warped reconstructed first current input speech frame; and

creating a new second current input speech frame by overlapping-and-adding said time-warped second current input speech frame and said time-warped reconstructed first current input speech frame.

Claim 16 (Previously Presented): The computer program product of claim 15, wherein each of said speech frame represents a speech signal having zero or more pitch cycles.

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Claim 17 (Previously Presented): The computer program product of claim 16, wherein said time warping comprises shifting one or more peaks of said pitch cycles of said second current input speech frame and one or more peaks of said pitch cycles of said reconstructed first current input speech frame to coincide at least one of said one or more peaks.

Claim 18 (Previously Presented): The computer program product of claim 15, wherein said overlapping-and-adding fades-in said second current input speech frame and fades-out said reconstructed first current input speech frame.

Claim 19 (Previously Presented): The computer program product of claim 15, wherein said reconstructing said first current input speech frame from a previous input speech frame comprises copying said previous input speech frame as said reconstructed first current input speech frame.

Claim 20 (Previously Presented): The computer program product of claim 15, wherein said previous input speech frame immediately precedes said first current input speech frame.

Claim 21 (Previously Presented): The computer program product of claim 15, wherein said overlapping-and-adding is a linear fade operation.